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EXECUTIVE SUMMARY EIA REPORT

Bagtingon Small Reservoir Irrigation Project (BSRIP)

Barangay Bagtingon, Buenavista, Marinduque

Executive Summary

Project Fact Sheet

Project name	Bagtingon Small Reservoir Irrigation Project (BSRIP)
Project location and area	Barangay Bagtingon in the Municipality of Buenavista
Nature of project	Zoned embankment-type dam
Capacity/size	Dam height- 27.93 m Reservoir area- 16.90 m Spillway- 25 m Main canal- 8.78 km Lateral canal- 6.49 km
Project background	The Bagtingon Small Reservoir Irrigation Project (BSRIP) involves the construction of medium-sized dam and appurtenant structures to impound water during wet season mainly to provide year-round irrigation to farmlands of beneficiaries in the rural areas of Buenavista, Marinduque.
Major components	Main dam Spillway structure Outlet works (irrigation and diversion outlet) Main and lateral canals and associated structures Access roads
Project cost	Php 990 million
Project proponent	National Irrigation Administration - MIMAROPA REGION Bayanan II, Calapan City, Oriental Mindoro Mobile No: 09178495267; Landline: (043) 288-7267; Email add: mimaropa@nia.gov.ph Contact person: Engr. Gerardo R. Perez
EIA preparer	Geographic Innovations for Development Solutions, Inc. (GRID5) 4th Fl., Hernandez Bldg, Grove, 4030 Los Banos, Philippines Landline: (049) 545-1576; Email add: grid5.inc.ph@gmail.com Contact Person: Milben A. Bragais, EnP – GRID5 President

Process Documentation

Terms of reference

The Terms of Reference (TOR) are prepared in line with the policy objective of PD 1586, DAO No. 2003-30, and MC No. 005 Incorporating Disaster Risk Reduction (IDRR) and Climate Change Adaptation (CCA) to help the project proponent comply with the procedural and other requirements for acquiring an Environmental Compliance Certificate (ECC) of the proposed project prior to construction..

The objective of the consulting services is to provide technical services to prepare the project's Social Environmental Impact Assessment (SEIA) Report, which is the primary document required in securing the ECC. Based on the Revised Guidelines for Coverage Screening and Standardized Requirements (EMB Memorandum Circular 2014-005), medium-sized embankment dams are considered Category B projects

(Non-Environmentally Critical Project). The project falls within the Irrigation with Dam Project (Category B. Non- ECP 3.1).

EIA Team

For this SEIA documentation, the proponent has commissioned GRID5, to undertake the conduct of the SEIA study. In this regard, all data and information used in this EIA report are based on actual studies and accumulated data by the project proponent. Secondary data was acquired from various journal articles and government data. The EIA study team is composed of the following experts/specialists provided below. Appendix 4 (Section 11.4) shows the sworn statement of accountability of the EIA preparers and the proponent.

Table A EIA Team Composition

Name	Field Of Expertise
Dr. Marco A. Galang	Environmental Specialist/Team Leader
Dr. Danesto B. Anacio	Social Safeguards Specialist/ RAP Specialist
Ms. Sarena Grace L. Quinones	IEC Expert
Mr. Arvin A. Catausan	Agriculturist/Agronomist Specialist
EnP. Bonifacio V. Labatos, Jr.	Aquatic Resource Specialist
Ms. Angela A. Flores	Geologist
For. Leonardo D. Barua	Watershed Management Specialist
EnP. Milben A. Bragais	Hydrologist

EIA study area

There are eight project barangays in Municipality of Buenavista specifically Barangays Bagtingon, Daykitin, Caigangan, Uno, Dos, Tres, Quatro, and Malbog. Meanwhile, Barangay Tabionan is the only project site in the Municipality of Gasan. The dam's specific location is at the northwestern part of Barangay Bagtingon, between 13° 17' 49" in the North latitude and 121° 56' 36.02" in the East longitude.

EIA Methodology and Schedule

The EIA for the proposed BSRIP follows the Revised Procedural Manual for DAO 2003-30 and DAO 2017-15 in the following activities: 1) IEC and Scoping, (2) primary data collection and secondary data, (3) environmental impact identification/prediction/assessment, (4) EMP formulation, and (5) EMoP development. Chapter 2 of this EIA report presents the baseline environmental conditions, which will serve as a reference(s) for resulting environmental impacts generated at different stages of the project.

The technical scoping checklist guiding the assessment is attached in Appendix 1 (Section 11.1).

Table B IEC methodology and schedule

Module	Methodology	Schedule
Land	Transect and quadrat sampling were conducted to determine terrestrial ecology within project area. Secondary data used are from Comprehensive Land Use Plan (CLUP) and government agencies.	October 23-27, 2023 (wet season) April 3-7, 2024 (dry season)
Water	The data for hydrology and water quality were processed through the use of primary and secondary data gathering.	
Air	Secondary data sources were gathered from Philippine Atmospheric, Geophysical, and Astronomical Services Administration (PAGASA). Maps were generated using QGIS. In terms of noise level, onsite measurement was undertaken using a portable noise meter (Extech Digital Sound meter)	
People	Primary data collection involves socio-economic survey and key informant interviews. Baseline profiling used Philippine Statistics Authority (PSA) data (2015 and 2020).	Initial IEC (December 9-10, 2021) Survey and KII (April 3-6, 2024) Public scoping (August 2, 2023) Supplemental IECs (Nov.24 and December 13, 2023)

Project Size

The project proposes the construction of a 27.93 m-high zoned embankment dam at the riverbed with an elevation of 80.07 m. The crest length of the dam is 226.65 m at an elevation of 108 masl. At its maximum water capacity, the water is estimated to extend 400 m upstream of Manlawanin and 300 m upstream of Subling, reckoned from the dam axis level.

Public Participation

DAO 2017-152 defines the minimum requirement for public participation in the conduct of EIA in the Philippines. The guidelines highlight the timely public disclosure of relevant information to stakeholders. In compliance with the guidelines, various public participation activities were conducted as shown in the table below. These activities were undertaken to assess the awareness of the host communities as well as their perception, issues, and concerns related to the project. The participants were also given a venue to identify potential impacts to their socio-economic and public health status.

Table C Summary of stakeholder engagement activities conducted for the project

Stakeholder engagement activity	Location	Participants	Date conducted	Concerns raised
Information, Education and Communication (IEC) activity	Municipal Hall of Buenavista	21 stakeholders from the Provincial and Municipal Government Offices	December 9, 2021	Potential for floods Possible effect impact of fault line's relative location to the project Transparency for the project Potential livelihood from project development
	Barangay Bagtingon Hall	25 stakeholders composed of barangay officials and representatives from religious, youth, health, education, women, and senior citizen sectors	December 10, 2021	

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Stakeholder engagement activity	Location	Participants	Date conducted	Concerns raised
Socio-economic and perception survey , KII	Barangays Bagtingon, Caigangan, Daykitin, Malbog, Uno, Dos, Tres, and Quatro in Buenavista Barangay Tabionan in Gasan	383 local community members from the host barangays	April 3 to 6, 2024	Potential flooding and erosion Decrease in farm harvest Water pollution
Public scoping	Municipal hall of Buenavista	47 stakeholders from provincial, municipal and barangay local government units	August 2, 2023	Project specification and design (gate spillway, water capacity) Compensation of farmers that will be affected Coordination among government agencies Safety measures for the community
Supplemental IEC activity	Barangay Tabionan in Gasan	25 stakeholders composed of representatives of municipal and barangay local government units	November 24, 2023	Compensation of farmers and their vegetation that will be affected Potential water shortage and quality issues for the downstream communities Project measures regarding dam failure/ overflow
	Barangays Bagtingon, Caigangan, Daykitin, Malbog, Uno, Dos, Tres, and Quatro in Buenavista	55 stakeholders composed of representatives of municipal and barangay local government units	December 13, 2023	Employment opportunities for members of the host communities Potential project impact on butterfly farming and shrimp catching

EIA Summary

Summary of baseline information and impacts

The table below shows the summary of baseline environmental conditions. Impacts that are foreseen to be significant are also incorporated in the table. The SEIA's Chapter 2 provides a more elaborate discussion on both baseline conditions and related impacts and mitigation measures for the project.

Table D Summary of Baseline Environmental Conditions and Potential Significant Impacts

Module	Baseline Environmental Condition	Summary of Potential Impacts
Land	The proposed dam site and reservoir are in a forestland with cover characterized as wooded grassland while the service area are in A&D lands. The entirety of the outcrops discovered along the streams, and presumably the entire area, were identified to be andesite. This lithologic unit is presumed to be a part of the San Antonio Formation that is exposed as an arcuate belt from La Mesa to Marlanga Bay. There are two (2) types of soil texture class within the project area namely; Sandy Loam; and Loamy Sand. The colors ranged from yellowish to brown. Particle density on all sampling sites fell within the normal range between 2.38 to 2.70 g/cm ³ . The sampling plots indicate neutral to slightly acidic pH levels which are suitable for plant growth. There are 46 plants species from 23 families while there are 30 bird and 2 mammal families. There were few important local species inventoried within project footprint.	Impacts in terms of compatibility with existing land use- forest will be cleared and modified to make way for construction of project components Encroachment of Environmentally Critical Areas (ECAs)-specifically areas declared as Protected Area (Marinduque Wildlife Sanctuary), areas set aside as tourist spots (Bulusukan Falls) and water bodies (Caigangan Watershed, Manlawanin and Subling Rivers) Change in sub-surface geology due to dam construction Soil erosion/ loss of topsoil- due to displacement of soil formation Vegetation removal and loss of habitat- due to land preparation activities for construction which may also hinder wildlife access
Water	Hydrology - The Caigangan River drains the immediate area of the proposed Bagtingon Small Reservoir Irrigation Project and connects to the Tipo River which ultimately empties at the Southwestern portion of Marinduque island. At higher elevations, the Caigangan River branches into a tributary that heads East and the other towards the North.	Change in drainage morphology, reduction of volumetric streamflow, change in river stream and river depth- During construction, water will be diverted through a dedicated canal, and a section of the river at the dam site will be blocked. Following dam completion, water will be stored within the dam, resulting in a permanent increase in upstream water levels. The impoundment of water in the newly created reservoir will likely alter the drainage patterns and overall morphology of the upstream river section.
Air	The province of Marinduque belongs to the third climate type of the Corona Classification System. The island is characterized by a dry season between December to February or from March to May. No maximum rain period predominates on the island.	Change in local climate and contribution in terms of GHG emissions- The project may result in change in local climate as well as increase in GHG emissions due to project construction and operation
People	Socio-Economic Aspects –The Municipalities of Buenavista and Gasan account for 10.89% and 15.13% of Marinduque's population (2020). The main economic activities in the project site are agriculture-related. However, the sector reported a relatively low yield per hectare (1.55 ton/ha) due to lack of adequate water for irrigation.	Displacement of settlers, properties, and livelihood- ROW acquisition has identified 47 landowners that will be affected by the project Threat to public health and safety- The project's nature may expose the locals to potential hazards resulting from dam failure Generation of locals benefits- the project will provide local employment and irrigation

Environmental Monitoring Plan and EMF and EGF Commitments

The Environmental Monitoring Plan (EMP) presents key mitigation and enhancement measures for projects with substantial impacts. These recommendations are translated into specific action points to ensure appropriate implementation. The plan also presents investment requirements and a guarantee to accomplish the proposed project plan. The proponent will allocate an initial amount of Php 250,000 for the Environmental Monitoring Fund (EMF) and Php 2,300,000 each for the Environmental Guarantee Fund (EGF) trust and cash fund for the project. These amounts will cover the monitoring and rehabilitation of project-related impacts.